Unit 9
Day 2
Equations with Radicals

1) $\sqrt{4x-9}=6$

$4x-9=36$

$4x=45$

$x=\frac{45}{4}$

2) $\sqrt{8-2x}=x$ $\quad x\geq 0$

$8-2x=x^2$

$x^2+2x-8=0$

$(x+4)(x-2)=0$

$x=-4$ $\quad x=2$

3) $x=2\sqrt{3x}$ $\quad x\geq 0$

$x^2=4(3x)$

$x^2=12x$

$x^2-12x=0$

$x(x-12)=0$

$x=0 \quad x=12$

4) $\sqrt{3x+1}+3=x$

$\sqrt{3x+1} = x-3$ $\quad x-3 \geq 0$

$3x+1 = x^2-6x+9$ $\quad x \geq 3$

$0 = x^2-9x+8$

$0 = (x-1)(x-8)$

~~$x=1$~~ $\quad x=8$

Use the substitution method:

5) ~~$\sqrt{x}+3\sqrt{x}=0$~~

$x+3\sqrt{x}=0$

let $y=\sqrt{x}$

$y^2=x$

$y^2+3y=0$

$y(y+3)=0$

$y=0$ $\quad y=-3$

$\sqrt{x}=0$ $\quad \sqrt{x}=-3$

$x=0$

6) $2\sqrt{x}-3\sqrt[4]{x}-1=0$

Let $y=\sqrt[4]{x}=x^{1/4}$

$y^2=\sqrt{x}=x^{1/2}$

$2y^2-3y-1=0$

$a=2 \quad b=-3 \quad c=-1$

$y=\frac{3\pm\sqrt{9-4(2)(-1)}}{4}=\frac{3\pm\sqrt{17}}{4}$

$\sqrt[4]{x}=\frac{3\pm\sqrt{17}}{4}$

$x=\left(\frac{3\pm\sqrt{17}}{4}\right)^4$

HOMEWORK:
Equations in Quadratic Form, Part B 17-29 (odd)
Equations Involving Radicals: 1-16